

**REMARKS**

Claims 1 has been amended herewith. The Specification has also been amended. New Claims 7-13 are added.

Claim 1 has been amended to recite that the presently claimed two-piece golf ball comprises *inter alia* at least one organic sulfur compound selected from thiophenol, thionaphthol, halogenated thiophenol, and metal salts thereof. Support for the amendment can be found at page 15, lines 4-6.

The specification has also been amended. Specifically, page 15, line 5, has been amended to correct the obvious typographical error “thiophthol” to “thionaphthol.”

New Claim 7 depends from Claim 1 and recites specific types of organic sulfur compounds. Support for the amendment can be found, for example, on page 15, lines 7-16.

New Claim 8 also depends from Claim 1 and recites that the organic sulfur compound is zinc salt of pentachlorothiophenol and/or diphenyldisulfide. Support for the amendment can be found on page 15, lines 14-16.

New Claim 9 depends from Claim 1 and recites that the core comprises a second polybutadiene. Support for the amendment can be found on page 11, lines 1-13.

New Claims 10, 11, 12 and 13 are independent claims which recite the subject matter of the original Claim 1 along with the subject matter of Claims 3, 4, 5 and 6, respectively.

Upon entry of the above amendments, Claims 1-13 will be all the claims pending in the application.

At page 2 of the Office Action, Claims 1 and 2 have been rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Application Publication No. 2003/0229183 to Voorheis et al. ("Voorheis") in view of U.S. Patent No. 4,955,613 to Gendreau et al. ("Gendreau").

Voorheis is relied upon as teaching a two-piece golf ball comprising a core made from (a) 49% polybutadiene synthesized with a lanthanide series element having a cis-1,4 bond content of at least 80%, (b) 0.05 to 18 parts per hundred of an organic peroxide, (c) an unsaturated carboxylic acid, (d) a sulfur-based curing agent and (e) fillers, with a core diameter of 35.56-40.64 mm and a cover made from a thermoplastic polyurethane with a thickness of 0.254-5.0 mm, and has a Shore D hardness of less than 60%.

The Examiner concedes that Voorheis does not teach that the core comprises 60-100% of a lanthanide polybutadiene.

It is asserted, however, that it would have been obvious to one of ordinary skill in the art to incorporate the rubber material of Gendreau (*i.e.*, a rubber comprising 15-85% of a lanthanide polybutadiene) into the golf ball of Voorheis.

Applicants respectfully submit that the rejection Claims 1-2 be reconsidered and removed in view of the following reasons.

In the present invention, a two-piece solid golf ball is that the solid core is formed from a rubber composition composed of

(A) 100 parts by weight of rubber base material containing 60 to 100 wt% of polybutadiene synthesized by using a catalyst of rare earth element and contains no less than 60% of cis-1,4-linkage,

(B) 0.1 to 0.8 parts by weight of organic peroxide compound,  
(C) an unsaturated carboxylic acid and/or a metal salt thereof,  
(D) at least one organic sulfur compound selected from thiophenol, thionaphthol, halogenated thiophenol, and metal salts thereof, and  
(E) an inorganic filler and said solid core deforms by 3.0 to 5.5 mm under a load of 980 N (100 kgf) and has a diameter of 37 to 42 mm.

Further, the presently recited solid core deforms by 3.0 to 5.5 mm under a load of 980 N (100 kgf) and has a diameter of 37 to 42 mm. The cover of the golf ball is formed mainly from (F) a thermoplastic polyurethane material and has a thickness of 0.5 to 2.5 mm and a Shore D hardness of 50 to 70, and said two-piece solid golf ball made up of a solid core and a cover deforms by 3.0 to 5.0 mm under a load of 980 N (100 kgf). As a result of this composition, the presently claimed golf ball is unexpectedly superior to conventional golf balls in terms of flying performance, cover durability, coating durability, and shot feeling.

In contrast to the present invention, particularly component (D), Voorheis teaches using the sulfur-based curing agents N-oxydiethylene 2-benzothiazole sulfonamide, N,N-diorthotolylguanidine, bismuth dimethyldithiocarbamate, N-cyclohexyl 2-benzothiazole sulfonamide, N,N-diphenylguanidine, or combinations thereof. *See* col. 4, paragraph [0032].<sup>1</sup>

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<sup>1</sup> Voorheis discloses that the curing agents listed in U.S. Application No. 09/894,960 are suitable agents. U.S. Application No. 09/894,960 (issued as U.S. Patent No. 6,695,718) discloses the compounds N-oxydiethylene 2-benzothiazole sulfonamide, N,N-diorthotolylguanidine, bismuth dimethyldithiocarbamate, N-cyclohexyl 2-benzothiazole sulfonamide, N,N-diphenylguanidine, or combinations thereof, which are listed above.

Gendreau also does not disclose adding organic sulfur compounds, such as thiophenol, thionaphthol, halogenated thiophenol, and metal salts thereof, to a polybutadiene.

In view of the shortcomings of Voorheis and Gendreau with regard the claimed organic sulfur compounds, Applicants submit that a *prima facie* case of obviousness does not exist since the prior art does not teach or suggest every element recited in the claims.

Applicants further assert that one of ordinary skill in the art would not be motivated to add the presently claimed organic sulfur compounds to an embodiment of the teachings of Voorheis in view of Gendreau because Gendreau does not teach adding organic sulfur compounds to a polybutadiene.

With regard to Claim 2, Applicants submit that neither Voorheis nor Gendreau fail to teach or suggest the use of a modified polybutadiene which is obtained by synthesis with a ND-based catalyst and a subsequent reaction with a terminal modifier.

In view of the foregoing, Applicants respectfully submit that the rejection of Claims 1-2 be reconsidered and withdrawn.

With regard to Claims 3-6, Applicants have assumed that the claims were objected to as being dependent on a rejected base claim, but that the claims were directed to allowable subject matter. Thus, Applicants submit that any objection to Claims 3-6 be withdrawn in view of the response to the rejection of Claims 1 and 2.

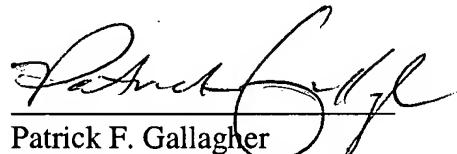
With regard to new Claims 7-9, Applicants submit that Claim 7-9, which depend from Claim 1, are in condition for allowance in view of the response to the rejection of Claims 1 and 2.

With regard to Claims 10-13, Applicants submit that Claims 10-13 are in condition for allowance since these claims recite the subject matter of original Claim 1 and the subject matter of already-allowable Claims 3-6.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
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